

VINYL COMPOSITION TILE (VCT)



VCT vs Vinyl Tile

Vinyl tile differs from VCT in having a higher amount of vinyl binder in the formula. Vinyl tile is considerably more flexible than vinyl composition tile; it has significantly higher resistance to abrasive wear and more resistance to impact damage.

Raw Materials

VCT is made from polyvinyl esters and inorganic fillers. Polyvinyl esters are manufactured using the same process as for PVC and is composed of chlorine (from common salt) and ethylene (from crude oil).

Compared with other types of vinyl flooring, vinyl composition tile (VCT) contains a high proportion of inorganic filler. Fillers increase the dimensional stability and reduce the elasticity of vinyl flooring. They also improve flame spread rating and reduce smoke generation. Calcium carbonate (limestone) is the preferred filler in vinyl flooring. Talc and clay are rarely used because of the stiffening effect. In the past, asbestos was used as a filler.

Manufacturing Process

Vinyl resins normally used in VCTs are copolymers of vinyl chloride-vinyl acetate, with a vinyl acetate content of 6-13% by weight. Some PVC homopolymer may be blended into the resins. The manufacture of VCT requires a high proportion of filler. A typical formulation consists of 80% fillers and pigments, 13% vinyl resins, 5% plasticizers, and the remainder processing aids and stabilizers.

After mixing, the dough-like mass is dropped onto a two-roll mill and accent colors are added. When the graining is judged to be right, the stock is folded into “blankets” to allow for more uniform graining when it passes through the sheeting calender. It then passes through a second finishing calender which reduces it to the final thickness and provides a smooth face. To produce tile with a surface-applied design, accent chips are applied to the face of the tile between the first and second calendars.

Manufacturing Pollution

VCT contains many of the same raw materials as sheet vinyl that may cause environmental harm. It performs better environmentally than sheet vinyl in one aspect: it contains far less plasticizer (5% vs. 27% by weight.). Plasticizers are additives which increase the workability of the flooring material making it more flexible. Plasticizers contain phthalates which may be endocrine disruptors that can interfere with embryo development and reproduction.

Embodied Energy

5,906 Btus per pound (*Environmental Resource Guide*, Section 09652.)

Manufacturing Locations

Armstrong: North America (5 locations)

Mannington Commercial: Salem, NJ

Recycled Content

Mannington Commercial VCT (Essentials, Designer Essentials, Brushworks or Inspirations) contain minimum 10% post-consumer recycled vinyl content. The batches generally contain 15 – 25% post-consumer recycled vinyl content.

Armstrong and Azrock have no recycled content

Durability / Maintenance

VCT must be waxed (this is the wear layer).

For residential applications, VCT often has a surface design with a layer of clear vinyl as the wear layer. Commercial grade VCT with a through-grained design is used.

Indoor Air Quality

VCT and adhesives used during application offgas VOCs and other chemicals for several weeks after installation. Adhesives used in resilient flooring installation are greater sources of indoor air emissions than the actual flooring materials.

Recyclability

See sheet vinyl

Cost

\$1.25 to \$2.00 per square foot installed for 1/8" 12x12 tiles. (Armstrong World Industries, May 2002.)

\$1.75 per square foot installed (Mannington, May 2002).

Suppliers

Armstrong World Industries, P.O. Box 3001, Lancaster, PA 17604, (717) 397-0611,
www.armstrong.com Techline: (877) 276-7879 press 2.

Azrock, Domco, 800-558-2240

Mannington Commercial, T & A Supply Company, 6807 S. 216th St., Kent, WA 98032, (206) 282-3770, www.mannington.com

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